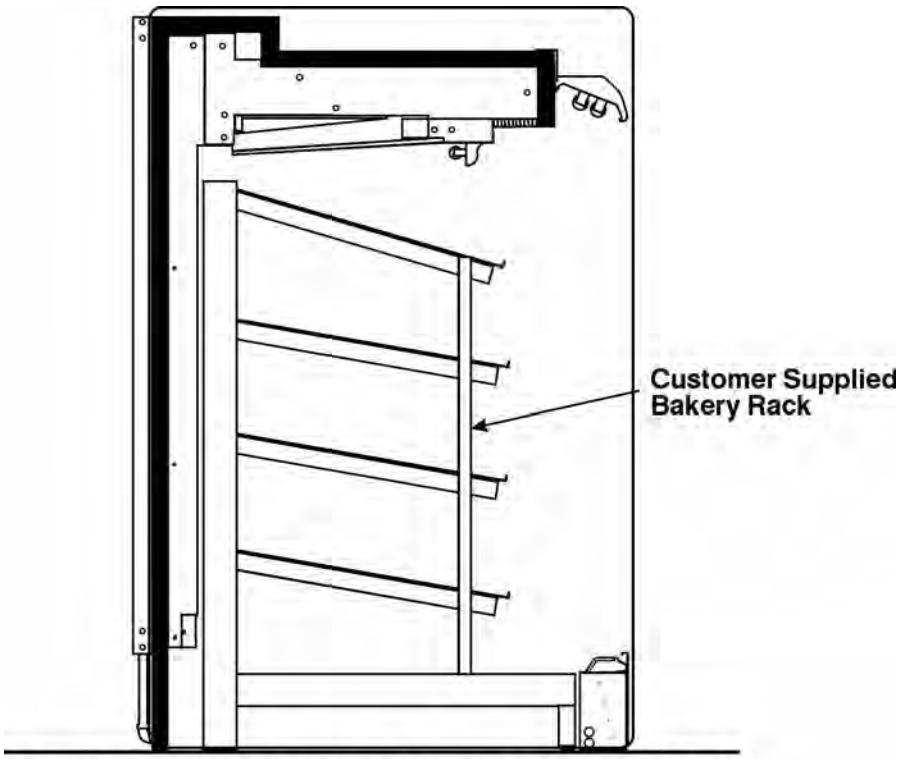
TYLER REFRIGERATION

Carrier
A United Technologies Company

series Advantage™

Installation & Service Manual



Front Load with Customer Supplied Bakery Rack

NDFLHP

HIGH PERFORMANCE FRONT LOAD ROLL-IN BAKERY MERCHANDISERS
Medium Temperature Refrigerated Display Cases

This manual has been designed to be used in conjunction with the General (UL/NSF) Installation & Service Manual.
Save the Instructions in Both Manuals for Future Reference!!

This merchandiser conforms to the American National Standard Institute & NSF International Health and Sanitation standard ANSI/NSF 7 - 2003.

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The following High Performance Medium Temperature Front Load Roll-In Bakery Merchandiser models are covered in this manual:

MODELS	DESCRIPTION
NDFLHP	12' HIGH PERFORMANCE FRONT LOAD ROLL-IN BAKERY MERCHANDISERS FOR COSTCO

SPECIFICATIONS

NDFLHP High Perf. Front Load Roll-In Bakery Merchandisers for Costco

Refrigeration Data:

MODEL	CASE LENGTH	CASE USAGE	CAPACITY (BTUH / FT)		EVAPORATOR (°F)	UNIT SIZING (°F)	DISCHARGE AIR		AVG. REF. CHARGE (LBS/FT)
			PARALLEL	CONVENTIONAL			TEMPERATURE (°F)	VELOCITY (FPM)	
NDFLHP	12'	BAKERY	1,827*	2,029*	+22**	+20	30	450***	0.36****

* **Capacity data listed for cases with 2 rows of T-8 canopy lights and 1 row of T-8 top lights. Adjustments must be made to this base rating for each option installed on this case. ADD 23 BTUH/FT for each row of optional lighted shelves. For sizing all refrigeration equipment other than TYLER, use conventional BTUH values.**

** **Evaporator temperature is based on the saturated pressure leaving the case.**

*** **Air velocity measured 1 hour after defrost at the top discharge air duct using an ALNOR JR. velometer with a scoop.**

**** **This is an average refrigeration charge per foot based on R22 and R404A refrigerant usage.**

FOR SPECIFIC COMPRESSOR SIZING INFORMATION, REFER TO TYLER APPLICATIONS FOR RACK SYSTEM COMPRESSORS AND/OR THE COMPRESSOR MANUFACTURERS FOR SINGLE COMPRESSORS. FOR LINE SIZING INFORMATION, REFER TO THE MISCELLANEOUS SECTION "BUFF" IN THE TYLER SPECIFCATION GUIDE.

Electrical Data:

Fans and Heaters (120 Volt)

MODEL	CASE LENGTH	FANS / CASE	TOTAL STANDARD FANS				DISCHARGE AIR ANTI-SWEATS	
			AMPS		WATTS		AMPS	WATTS
			UPPER	LOWER	UPPER	LOWER		
NDFLHP	12'	10	3.20	2.04	284.0	181.2	0.24	28.8

T-8 Lighting with Electronic Ballasts (120 Volt)

MODEL	CASE LENGTH	CANOPY LIGHTS* (2 ROWS)		TOP LIGHTS* (1 ROWS)		SHELF LIGHTS – PER ROW								MAX. LIGHTING (3 ROWS)	
		AMPS	WATTS	AMPS	WATTS	AMPS				WATTS				AMPS	WATTS
						1	2	3	4	1	2	3	4		
NDFLHP	12'	1.40	168.0	0.70	84.0	----	----	----	----	----	----	----	----	2.10	252.0

* Standard lighting for this case is 2 rows of T-8 canopy lights and 1 row of T-8 top lights.

Defrost Data:

DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)	TERMINATION TEMPERATURE (°F)	EPR SETTINGS **		DEFROST WATER (LB / FT / DAY)
				R22 (PSIG)	R404A (PSIG)	
NDFLHP – TIME OFF	12	12	- - -	45	58	15.9

* If an Electronic Sensor is used for termination, it should be set at 43°F termination temperature. The sensor must be located in the same location as the defrost termination klixon for that defrost type.

** Case should be operated with EPR only. Use the settings shown in the chart to give this pressure at the case. **ADD** 0.5# to EPR setting for each 1000 foot rise in elevation.

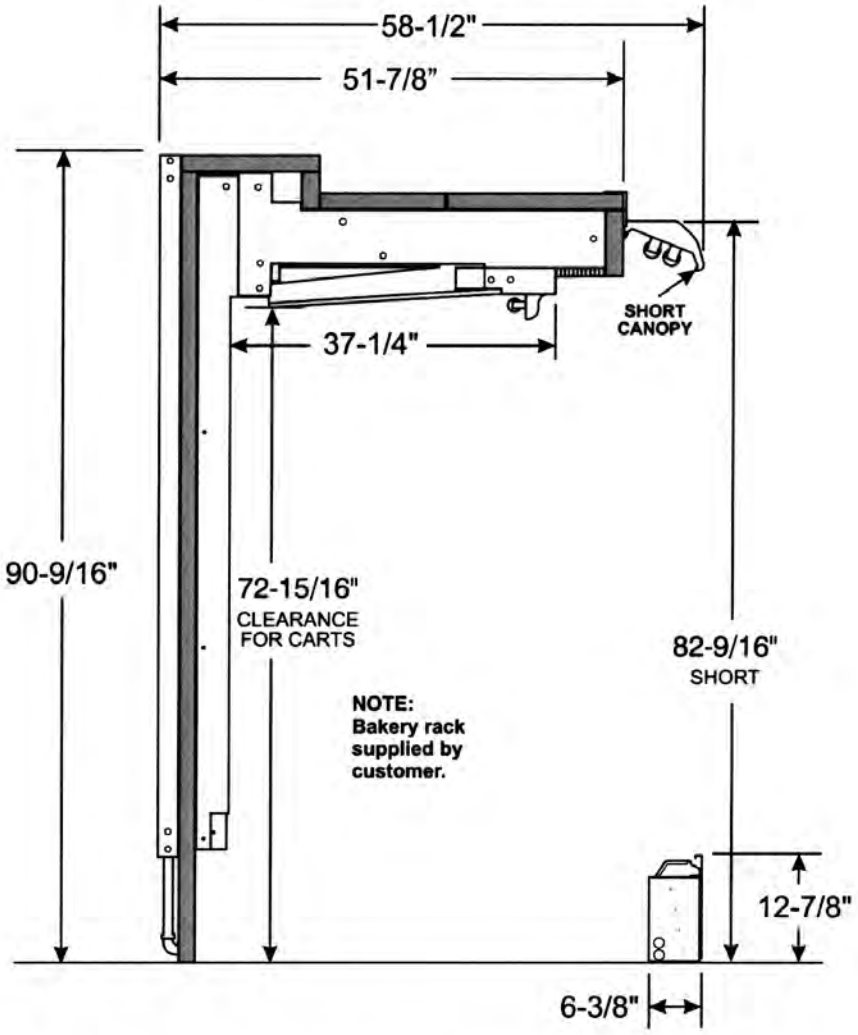
CASE CIRCUITS: NDFLHP case requires four separate 120V circuits: 1) an Upper Case Fan Circuit, 2) a Lower Case Fan Circuit, 3) an Anti-Sweat Heater Circuit, and 4) a Shelf & Canopy Light Circuit.

UL SANITATION approved in accordance with ANSI/NSF – 7.

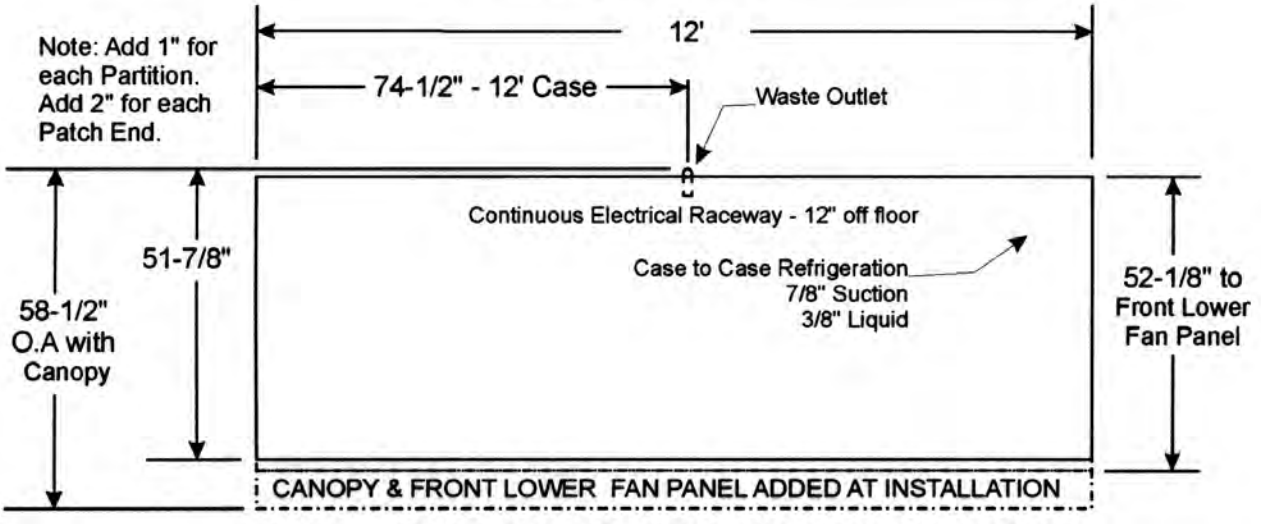
CASE BTUH REQUIREMENTS are calculated to produce approximately the indicated entering-air temperature with absolute maximum operating ambient limits of **75°F & 55RH.**

The information contained herein is based on technical analysis and/or tests performed in a controlled lab environment that are consistent with industry practices, and is intended as a reference for system sizing and configuration purposes only and for use by persons having technical skill at their own discretion and risk. Conditions of use are outside of Tyler's control and we do not assume and hereby disclaim any liability for results obtained or damages incurred through application of or reliance on the data presented, including but not limited to specific energy consumption with any particular model or installed application. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

NDFLHP CROSS SECTION



NDFLHP FLOOR PLAN


Note: Add 1" for each Partition. Add 2" for each Patch End.
12'
74-1/2" - 12' Case
Waste Outlet
Continuous Electrical Raceway - 12" off floor
Case to Case Refrigeration
7/8" Suction
3/8" Liquid
51-7/8"
58-1/2" O.A with Canopy
52-1/8" to Front Lower Fan Panel
CANOPY & FRONT LOWER FAN PANEL ADDED AT INSTALLATION

INSTALLATION PROCEDURES

Carpentry Procedures

Leveling the Cases

Check the levelness of the floor area to be used. The floor surface where this case is to be located should be as smooth and level as possible. Be sure there are no large bumps or dips in the floor. Insert shims under the case, where necessary, to keep the case level. The highest area of the line-up will have to be the determining high level point. The cases can then be leveled and joined from a level case at the high point. Level cases are necessary for both case pull-ups and proper operation. Small metal shims are furnished in the pull-up parts kit.

Joint and End Trim

Joint and end trims are shipped as a kit. The kit drawing is shown on page 13 of this manual. Follow these instructions to complete assembly of these cases.

Patch ends are shipped loose because of shipping height limitations. Patch end kit drawing is shown on page 14 of this manual.

Sealing Joints

Tubes of caulking compound are furnished in the blister pack. The best time to make a waterproof case joint is at installation. It is recommended that two beads of caulking be used, one inside of the foam gasket for sanitation and one outside of the foam gasket for refrigeration. For an added measure of sealing, air-conditioning/heating duct tape can be used under the inside joint trims.

See "General-UL/NSF I&S Manual" for proper refrigeration line installation and sealing.

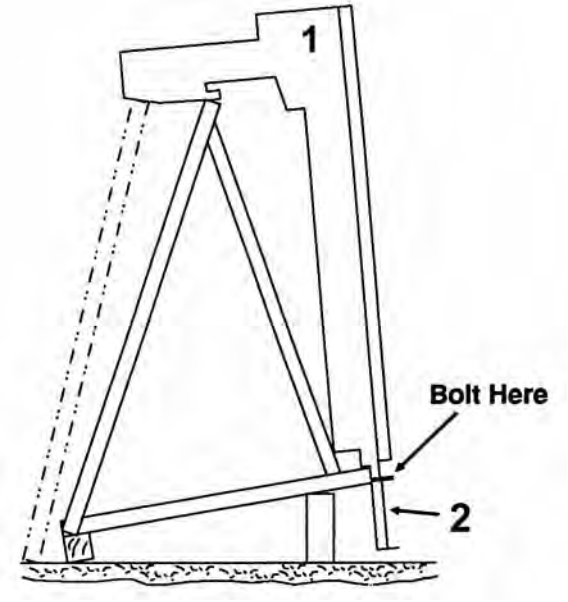
Special Instructions

Be sure to read and understand the special instructions on handling these cases in this manual.

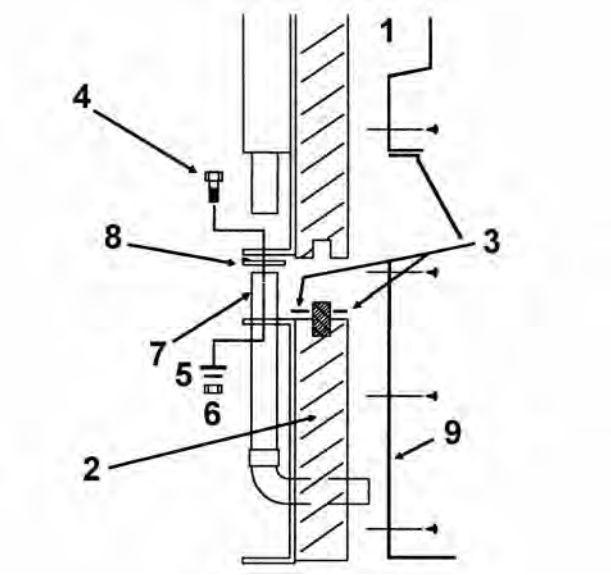
WARNING

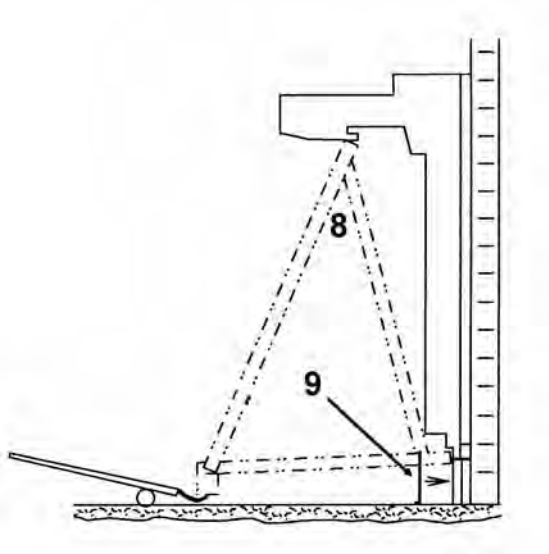
These cases are top heavy and require two or more people to move and/or position them. Improper handling of these cases could result in personal injury.

1. Remove the items packed on the skid.



2. Carefully raise the case (1) by tilting forward far enough to get enough clearance for the rear wall extension (2).

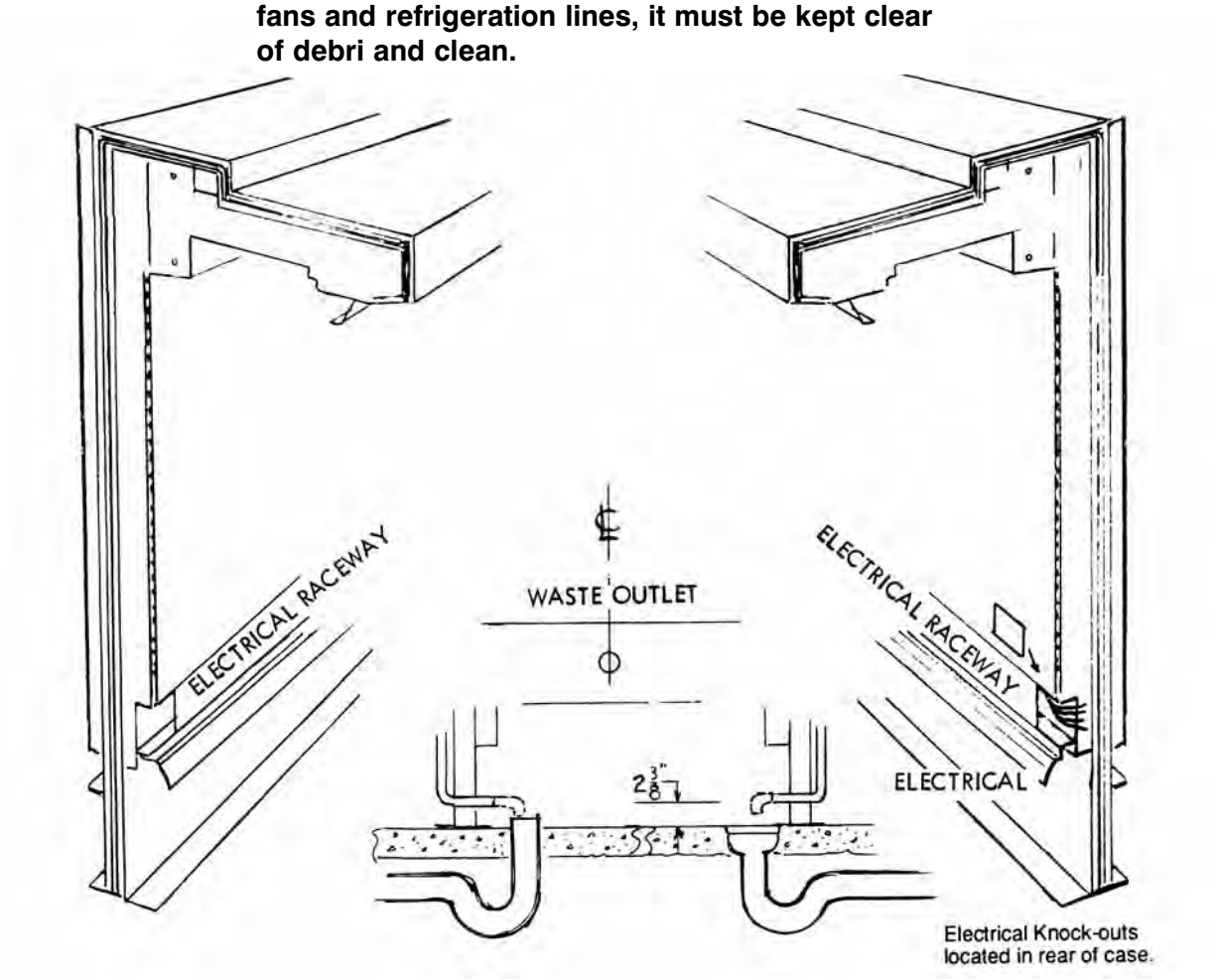




3. Apply the grey pressure sensative gasket (3) on both sides of the black foam gasket on the rear wall extension (2).
4. Install the rear wall extension (2) to the bottom of the case (1) with four bolts (4), washers (5) and nuts (6).
5. Install drain extension (7) on the bottom of the case (1) and secure with a hose clamp (8).
6. Move the case to it's final installation location. Since it will be supported by the patch ends, the location does not matter.
7. Pilot drill 3/16" holes in rear wall extension (2) and install the base cladding (9) with self-tapping screws.
8. Install joint trims and pull-ups per joint trim kit drawing on page 13.
9. Install patch ends per patch end kit drawing on page 14.
10. remove the rest of the skid.

NOTE

Since the top panel is the service access panel for fans and refrigeration lines, it must be kept clear of debri and clean.



Waste Outlet - Floor Drain

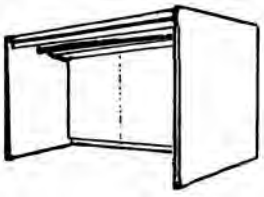
The preferred method is an in floor drain. Position drain so floor sweepings can not be swept into the drain.

The alternate method is a flush drain, where permitted.

NOTE

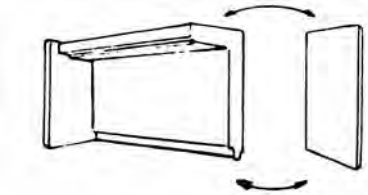
Do not slope floors, since trucks need a flat platform.

Patch Ends



Two inch patch ends are standard and will support the weight of a single case.

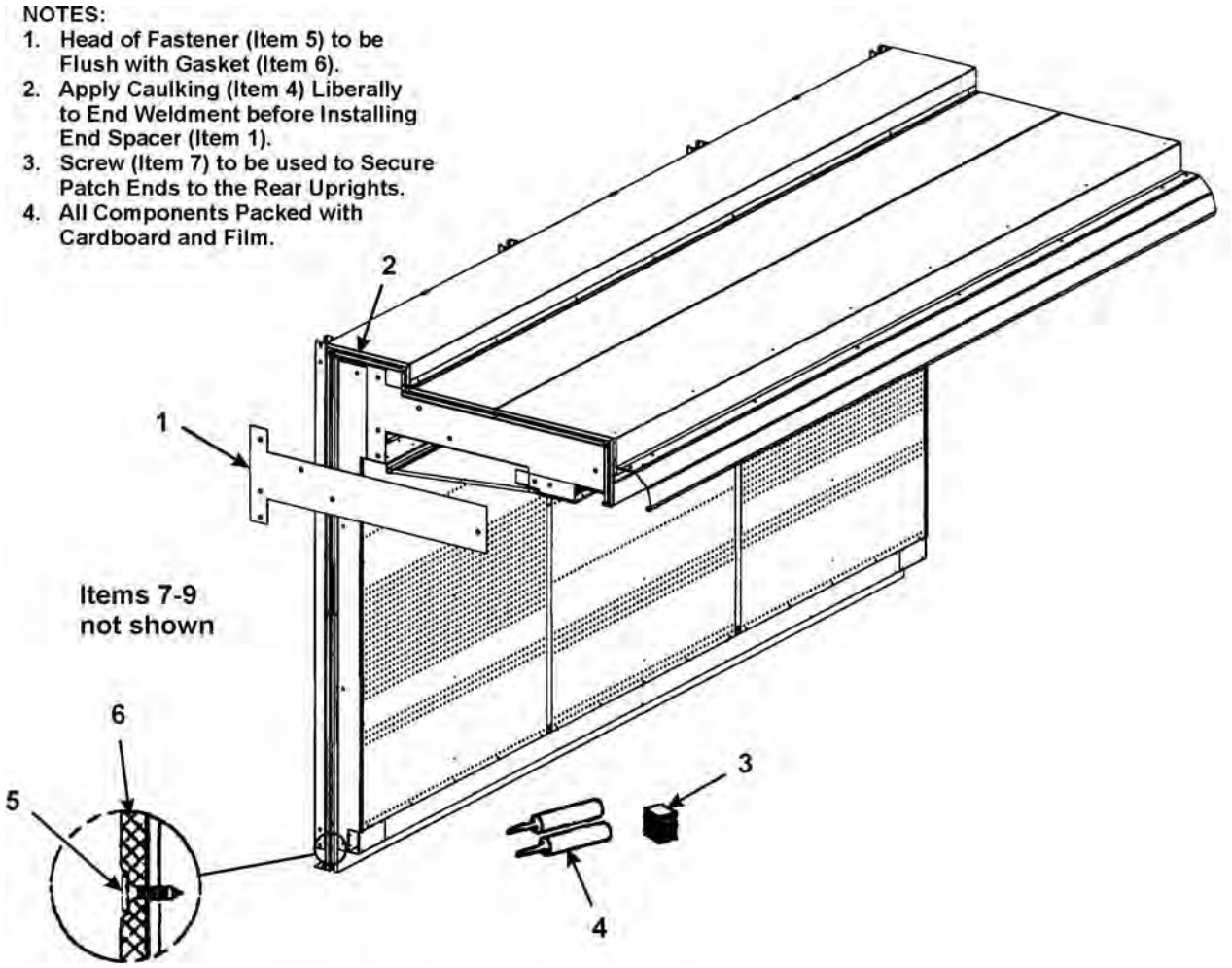
A single case is self-supporting with the ends carrying the weight. Shipping height limitations make it necessary to ship the case without ends. They must be installed on location after the rear wall extension is added to the case.



IMPORTANT NOTE

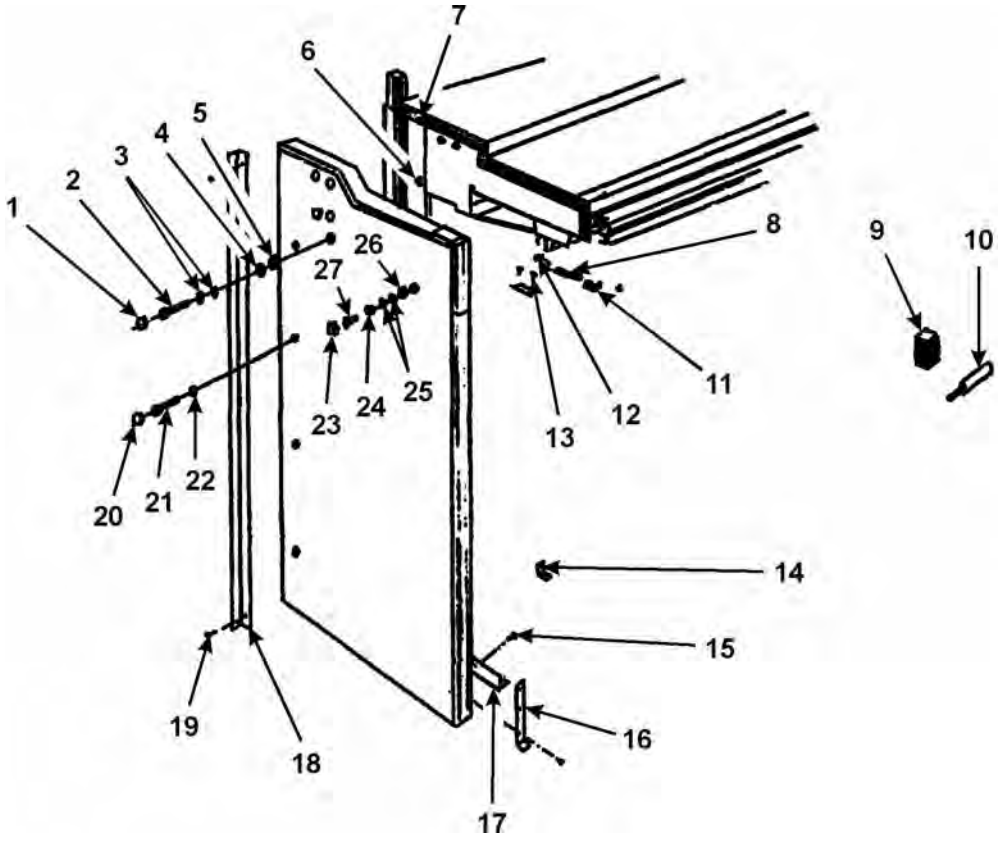
This case was designed to provide a high degree of display flexibility in shelving, shelving inserts or roll-in carts. The base structure has been eliminated, making the merchandiser dependent upon support from the two patch ends.

Joint Trim Filler Kit


NOTES:
1. Head of Fastener (Item 5) to be Flush with Gasket (Item 6).
2. Apply Caulking (Item 4) Liberally to End Weldment before Installing End Spacer (Item 1).
3. Screw (Item 7) to be used to Secure Patch Ends to the Rear Uprights.
4. All Components Packed with Cardboard and Film.
2
1
Items 7-9 not shown
6
5
3
4

Item	Part No.	Description	Qty.
1	9055422	End Spacer	2
2	5107190	Tape, Foam	12 Ft.
3	5105103	Shim, Leveling	8
4	5106055	Caulking, White 11oz.	4
5	5618908	Fastener, Fastex	5
6	5145225	Gasket, Foam	15 Ft.
7	5926599	Screw, Swage Form	8
8	5616894	Board, Corrugated	As Needed
9	5616895	Film, 26” 250MIN 10ML	As Needed

Patch End Trim Filler Kit



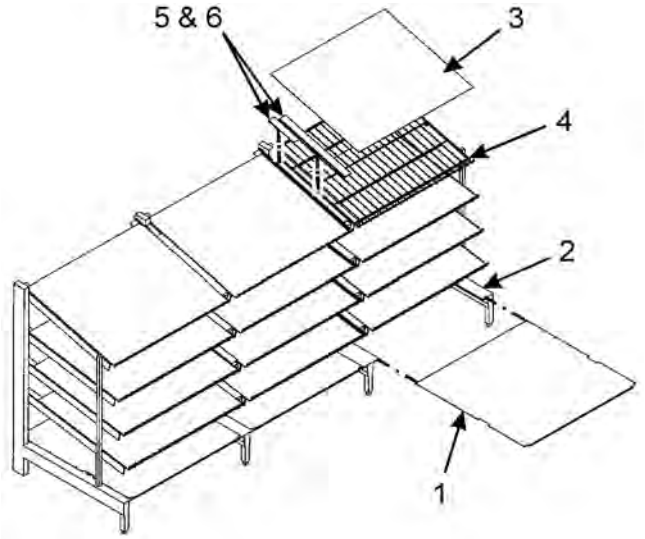
Item	Part No.	Description	Qty.
1	5100913	Plug Button, 1-3/8”	5
2	5221251	Screw	3
3	5100982	Washer, Flat	6
4	5628631	Lockwasher	3
5	5100643	Nut, Hex	3
6	5618908	Fastener, Fastex	6
7	5145225	Gasket, Foam	7.5 Ft.
8	5186732	Trim Grid, Front End	1
9	5105103	Shim, Leveling	10
10	5106055	Caulking, White 11 oz.	2
11	5186734	Trim, End (Htr. Wire)	1
12	5089303	Trim, End Rear Grid	1
13	5183536	Screw, Self Drilling	2
14	5184600	Trim, End Cart Stop	1

Item	Part No.	Description	Qty.
15	5111030	Screw, Sheet Metal	2
16	5184601	Trim, End Base	1
17	5613835	Angle	1
18	5183475	Trim, Joint Outside	1
19	5205439	Screw, Sheet Metal	39
20	5100918	Plug Button, 5/8”	4
21	5148997	Screw	4
22	5101000	Lockwasher	4
23	5105054	Plug Button, 1”	1
24	5100979	Washer, Flat	2
25	5101006	Lockwasher	1
26	5100634	Nut, Hex	1
27	5149341	Screw, Cap	1

Rack Shelf Assembly with Shelf Overlay & End Closeoff Kits

After the customer supplied racks have been assembled and installed in the case, the following shelf overlay and end closeoff kits should be added to the rack to assure proper operating temperatures.

Shelf Overlay Kit (P/N: 9055431)



1. Install lower duct panels (1) on bottom rack supports (2) and secure with screw.
2. Position shelf covers (3) on top of wire rack shelves (4).

NOTE

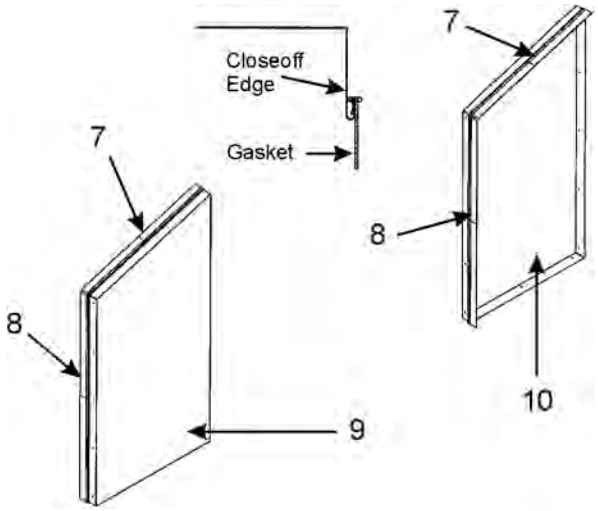
Short shelf cover must be installed first, then position long shelf cover to close the opening between rack shelves.

3. Position shelf rack covers (5 and 6) to cover space between shelf covers (3) and secure with screws.

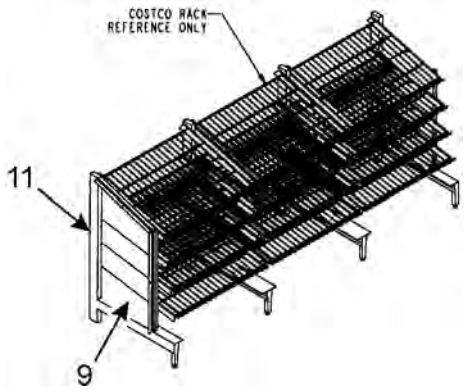
LH and RH Rack Closeoff Kits (P/N: 9055301 and 9055302)

NOTE

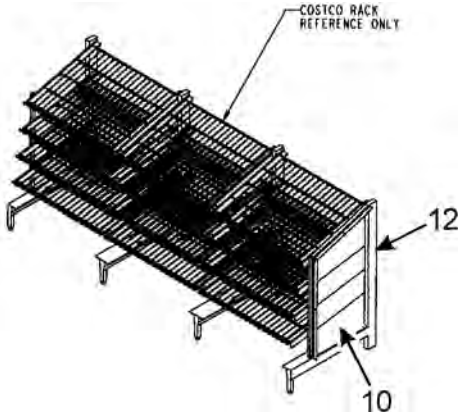
Gasket mount on top and front edges of the LH and RH closeoffs. The gaskets point to the outside of the closeoff panels to seal the closeoffs to the patch ends.



1. Position gaskets (7 & 8) on the top and front edges of the LH and RH closeoff (9 & 10).



2. Install LH closeoff (9) on LH rack shelf support (11) with screws in back, bottom and front surfaces.



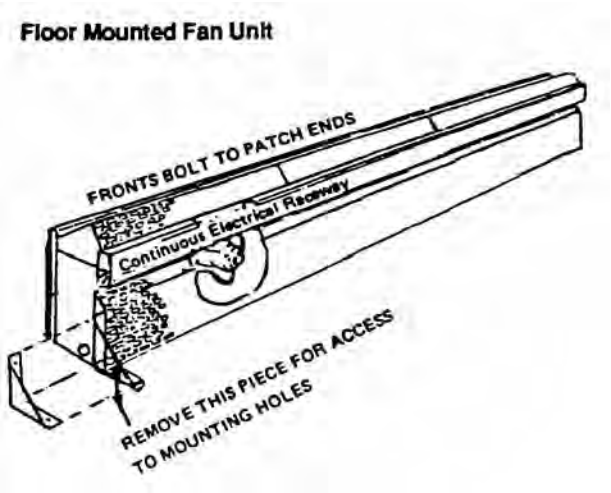
3. Install RH closeoff (10) on RH rack shelf support (12) with screws in back, bottom and front surfaces.

Installing Front Fan Panel

NOTE

Floor anchors and mounting hardware are not provided. The installer must provide the required mounting hardware.

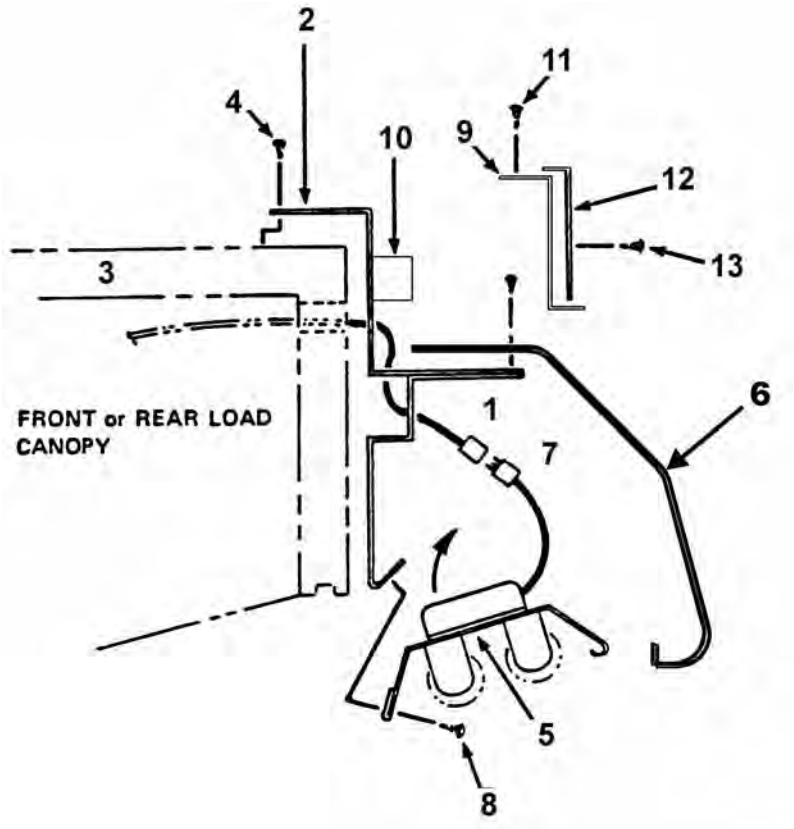
Install the 12' front fan panels with floor anchors. All front fan panel braces are located on the underside of the front panel. The braces are located every four feet and at the ends of the front fan panels. The front fan panels may be attached to the patch ends, if desired.


Floor Mounted Fan Unit
FRONTS BOLT TO PATCH ENDS
Continuous Electrical Raceway
REMOVE THIS PIECE FOR ACCESS TO MOUNTING HOLES

Hood Assembly

WARNING

Make sure all power is off to the case. Electrical servicing should always be done by a qualified electrician. Improper servicing could result in product damage and/or personal injury.



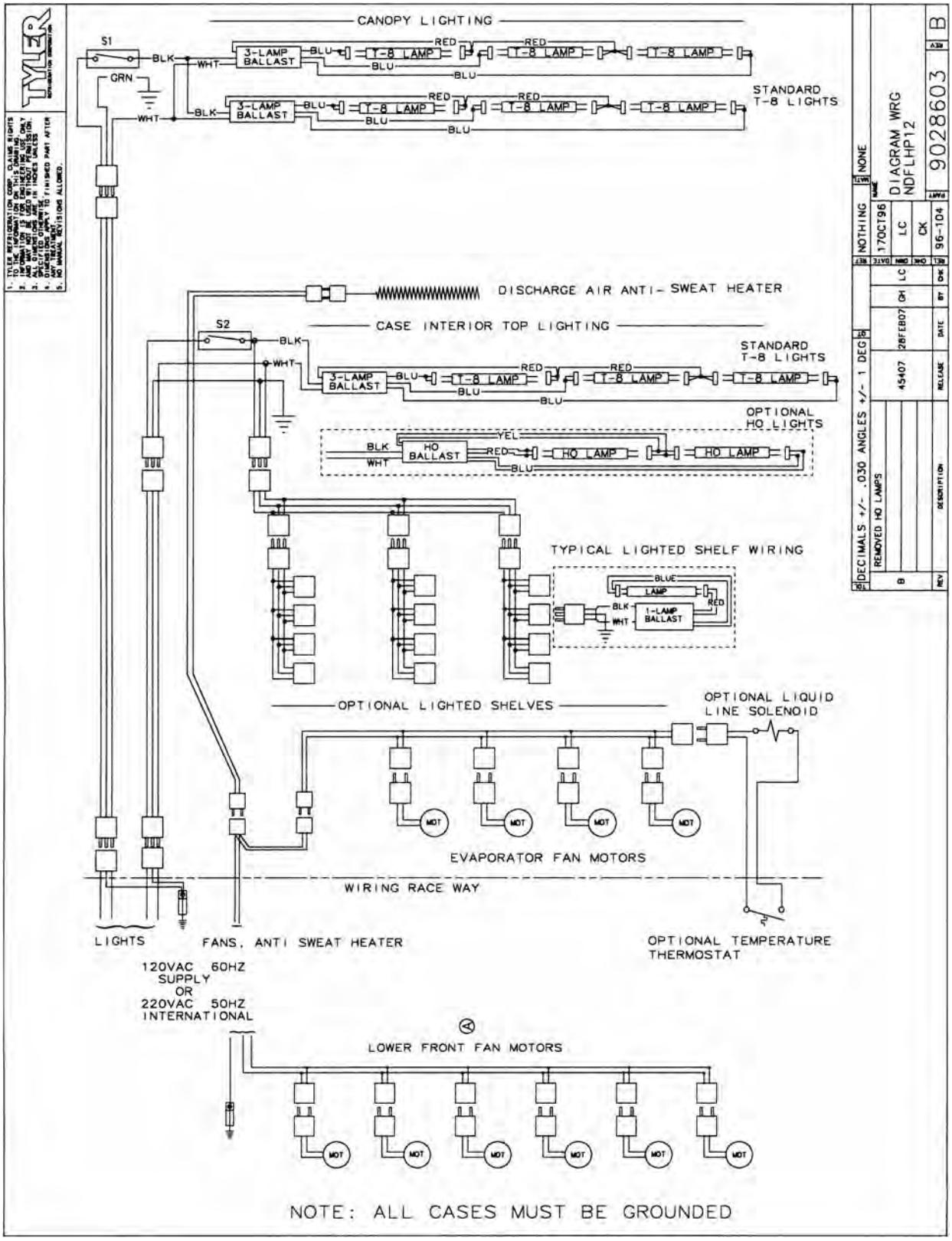
1. Pull the 3-prong female receptacle (1) through the hood extension weld assembly (2).
2. Fasten hood extension weld assembly (2) to the canopy (3) with tappit screws (4).
3. Hook the light channel assembly (5) into the front lip of the front hood (6).
4. Plug the light channel wire (7) into the female receptacle (1).
5. Swing the light channel assembly (5) up into place and secure with truss head screws (8).
6. Install top front cladding (9) over ballast (10) with screws (11).
7. Complete the assembly by installing the hood extension joint trim (12) with truss head screws (13).

WIRING DIAGRAM

ELECTRICIAN NOTE - OVERCURRENT PROTECTION

120V circuits should be protected by 15 or 20 Amp devices per the requirements noted on the cabinet name-plate or the National Electrical Code, Canadian Electrical Code - Part 1, Section 28. 208V defrost circuits employ No. 12 AWG field wire leads for field connections. On remote cases intended for end to end line-ups, bonding for ground may rely upon the pull-up bolts.

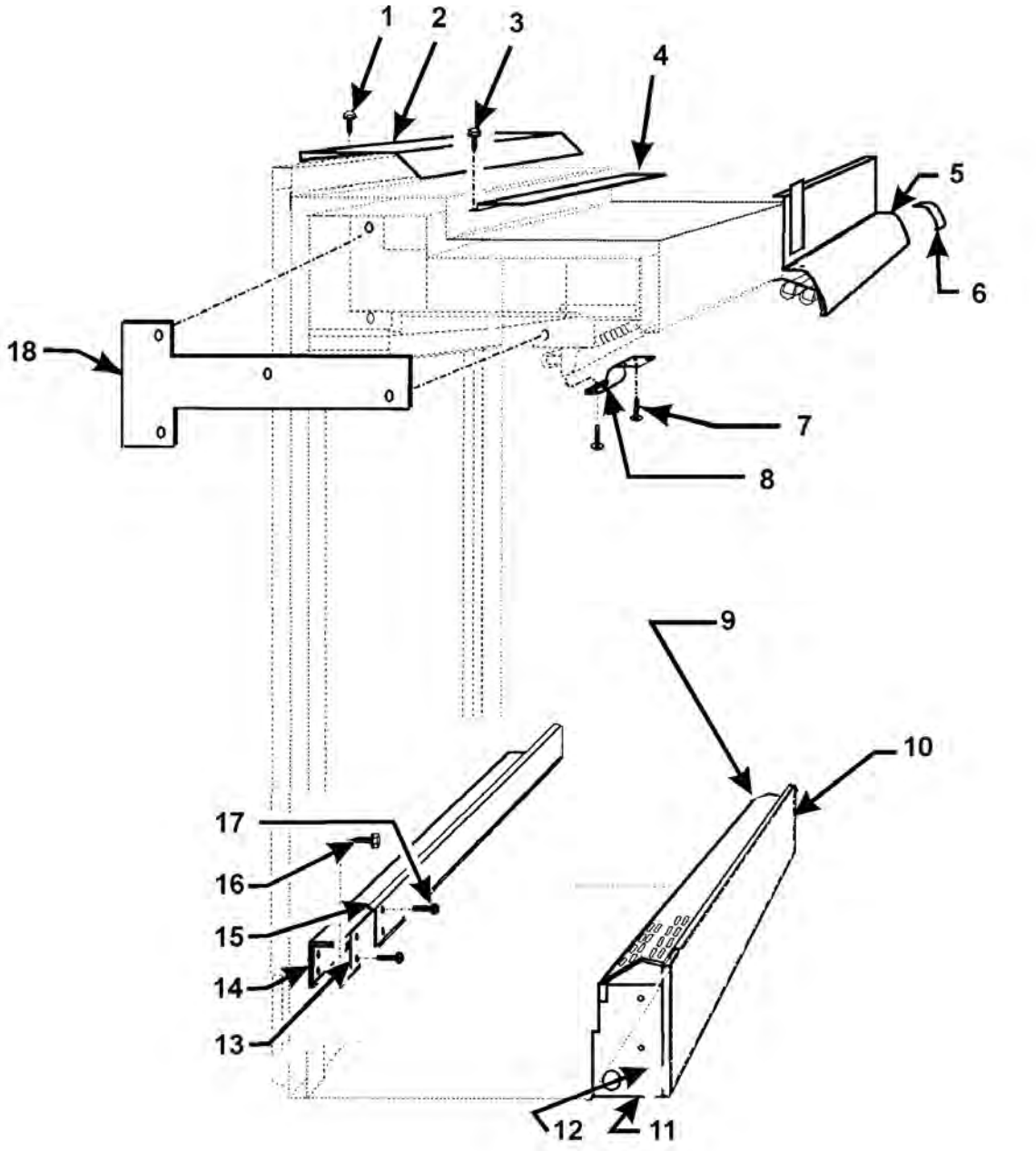
NDFLHP Domestic & Export (50 Hz) 12' Case Circuits



PARTS INFORMATION

Cladding and Trim Parts Lists

Item	Description	NDFLHP (Costco) 12’
1	Screw (per close-off panel assy)	1309067 (12)
2	Close-off Panel Assembly	9026546
3	Screw (per top cover)	5183536 (10)
4	Top Cover	5186278
5	Front Canopy Hood, Ptd.	9025224
6	Standard Hood Joint Trim	5222015
	Short Hood Joint Trim (Costco)	5222048
7	Screw (per hood joint trim)	5205439 (6)
8	Light Channel Joint Trim	5222014
9	Front Duct	5244407 (3)
10	Overlay Panel, Bright Diamond Plate	9055430
11	LH End Close-off	9053683
	RH End Close-off	9053682
12	Electrical Junction Box (in assembly)	5102187
	Junction Box Cover (in assembly)	5102157
	Electrical Conduit (in assembly)	5102195
13	Raceway Cover	5184499
	Screw (per raceway cover)	5111197 (9)
14	Raceway Assembly	5184501
15	Raceway Cover Plate	5184497 (2)
16	Screw (per raceway assembly)	5183536 (8)
17	Screw (raceway cover plate)	5111197 (9)
18	End Spacer	5184602 (2)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14
13
12
11

Operational Parts List

Case Usage	Domestic
Electrical Circuit	115 Volt 60 Hertz
Case Size	12’
Upper Fan Motor	9458939 16 Watt
Upper Fan Motor Brackets	5205112
Upper Fan Bracket Plate	9041077
Upper Fan Blades (8.75” 40° 5B)	9038994
Opt. ECM Upr. Fan Motor	N/A
Opt. ECM Upr. Fan Bracket	N/A
Opt. ECM Upr. Fan Blades	N/A
Lower Fan Motor	5125532 5 Watt
Lower Fan Motor Brackets	5120098
Lower Fan Blades (7.75” 37° 5B)	9454640
T-8 Lamp Ballast (canopy) (1st & 2nd row)	5991030
(3rd row)	5991030
Opt. 800MA Lamp Ballast (canopy)(1st & 2nd row)	5049140
(3rd row)	5049140
T-8 Lampholder (canopy)	5232279
800MA Lampholder (canopy) (telescoping)	5614628
(stationary)	5614629
Light Switch (SPST)	5100565
Anti-Sweat Heater (air grid retainer)	9055305

For information on operational parts not listed above contact the TYLER Service Parts Department.